

**MWI 8730.1**

**REVISION F**

**EFFECTIVE DATE: October 20, 2016**

**EXPIRATION DATE: October 20, 2021**

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# **MARSHALL WORK INSTRUCTION**

**QD01**

## **EQUIPMENT LOGS/RECORDS**

**COMPLIANCE IS MANDATORY**

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### DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Change/ Revalidation/ Canceled)	Document Revision/ Change	Effective Date	Description
Baseline		5/14/99	Document converted from MSFC-P10.1-CO1 to a Directive. Previous history retained in system as part of canceled or superseded ISO Document files.
Revision	A	8/18/99	Updated document to reflect new MSFC reorganization. Paragraph 6.2.2.f: changed "S&E Chief Engineer" to "Project Systems Engineer," and changed "Administrative Services Division" to project/quality plan designated record center." Paragraph 6.2.4 was deleted. Paragraph 6.3.h: changed "Administrative Services Division" to "project/quality plan designated record center."
Revision	B	3/6/00	Paragraphs 3.e and 12 changed to update quality records requirements documents using MPG 1440.2.
Revision	C	1/8/02	Document renumbered in accordance with MPG 1410.2. Update title of reference document on page 3. Add clarification to 6.1.3 on page 4 concerning log book maintenance while applicable hardware is integrated to the next higher assembly. Further define the category of hardware to be tracked in section 1 per paragraph 6.2.2.2 which normally excludes standard off-the-shelf hardware.
Revision	D	9/30/2004	Font to Times New Roman. Change QS01 to QD01. Update MPG's to MPR's in Applicable Documents and subsequent references. Change to shall statements for all mandatory requirements per HQ Rules Review Action. Replace the word logs with log books in 1, 6.1.1, and 6.1.2. Clarify references in 6.1.1, 6.3.1, and 6.3.3, that official log books are specified by design on the drawings. In 6.1.2 address log book maintenance until hardware is removed from flight inventory and address log-book closeout and turn in addressed in 6.2.2.6. In 6.2.1.2 remove Office from S&MA reference. In 6.2.2.1 clarify that in process handling and testing is not detailed in log-books unless specified by design. Clarify recording of as built configuration during the initial assembly in 6.2.2.2 and subsequent updates to configuration in 6.2.2.3. Clarify log-book retrieval post flight on re-flight hardware continuing in flight status.
Revision	E	9/25/2009	Revised 2. Applicability statement to address the applicability to Michoud Assembly Facility. Updated template at 3. Adding Authority to Applicable Documents. Reordered 3. Authority/Applicable Documents in hierarchical order. Minor editing.
Revision	F	6/10/2010	Separated multiple shall statements and re-numbered paragraphs and pages. Re-structured the sentence in 6.3.7. Changed text and font size in flow chart to Times New Roman, size 12. Added wording in section 6.1.9 to acknowledge the existence of Unofficial Log books currently in use which are not governed by the requirements in this MWI because they are not imposed by an engineering requirement. Numerous minor editorial changes. Paragraphs numbers re-identified in the flow diagram due to re-numbering. Moved statements to 6.1.10 and 6.1.11 that are more like policy. Clarified language in 6.2.1.2 (d) and 6.2.2.1. Moved comment on detail parts not to be listed in Section 1 from 6.2.2.2 to 6.2.2.3. Clarified that the DR number only needs to be entered in section 6.2.2.7. Clarified language in 6.2.2.10 and 6.3.3. Moved language from 6.3.3 to 6.3.6. In section 3 and 6.2.1.1, replaced MPR 8060.1 with MPR 7123.1 and replaced MPR 1440.2 with NPR 1441.1. In 6.1, changed Policy to Criteria. In 9, updated language in Records. Clarified language in 6.2.2.13 and added 6.2.2.14 to address end of useful life of the hardware and Log Book.

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Revalidation	F	10/20/2016	Re-formatted to comply with new required template per MPR 1410.2 & as instructed in MWI 1410.1. No changes were made to technical content. Replaced S&MA with SMA. Flow Diagram deleted.
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## 1. PURPOSE

To establish a uniform method for the initiation, control, and maintenance of equipment Log Books for certain selected flight hardware and related ground support equipment which is produced or procured for in-house use as required by MPR 8730.1.

## 2. APPLICABILITY

2.1 This MWI applies to Center personnel, programs, projects, and activities, including contractors and resident agencies to the extent specified in their respective contracts or agreements. (“Contractors,” for purposes of this paragraph, include contractors, grantees, Cooperative Agreement recipients, Space Act Agreement partners, or other agreement parties.)

2.2 This MWI applies to the Michoud Assembly Facility.

2.3 This MWI applies the following: all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms: “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.

2.4 This MWI applies the following: all document citations are assumed to be the latest version unless otherwise noted.

2.5 This MWI applies to all organizations that initiate and maintain the Log Books when required by the design specification.

## 3. AUTHORITY

MPR 8730.1, “Inspection and Testing”

## 4. APPLICABLE DOCUMENTS AND FORMS

4.1 NRRS 1441.1, “NASA Records Retention Schedules”

4.2 MPR 5000.1, “Purchasing”

4.3 MPR 7123.1, “MSFC Systems Engineering Processes and Requirements”

4.4 MPR 8730.3, “Control of Nonconforming Product”

4.5 MSFC Form 3473, Log Book

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## 5. INSTRUCTIONS

### 5.1 Criteria.

5.1.1 To assist in obtaining continuous history, traceability, refurbishment, maintainability, and design information; equipment Log Books/records shall be initiated and maintained for items when specified by drawing requirement.

5.1.2 Equipment Log Books shall accompany the items of equipment to which they apply, starting with the initial turnover of the article from the manufacturing organization to the inspection, test, or checkout organization.

5.1.3 All subsequent testing, modification, repair/rework, refurbishment, or storage, until the item is scrapped, removed from flight inventory, or launched, shall be annotated by the organization conducting the event.

5.1.4 When the drawing specifies a Log Book for an assembly, Log Books shall not be established and maintained for components or elements of that assembly unless that component or element drawing specifies its own Log Book.

5.1.5 Log Books shall be initiated and maintained for a part number only when specified on its drawing.

5.1.6 Log Books shall be maintained for part numbers specified throughout all subsequent levels of assembly, inspection, testing, checking, refurbishment, storage, and transportation.

5.1.7 Upon integration of Log Book-controlled hardware, Log Book maintenance shall be deferred to the higher level of assembly-specified Log Book (normally systems level assembly) provided all age/cycle/time critical components are tracked at the integrated level Log Book, unless otherwise specified by project engineers.

5.1.8 Upon disassembly from next higher assembly, the subassembly Log Book maintenance shall resume.

5.1.9 If an unofficial Log Book (not required by engineering direction on a drawing, specification, or procurement document) is initiated by a project or test engineer, then that engineer shall annotate the unofficial Log Book "For Reference Only," "For Engineering Use Only," or equivalent statement. Unofficial Log Books may use the MSFC Form 3473 if so annotated. Unofficial Log Books may be any suitable format developed to capture the desired data.

5.1.10 Time/cycle-critical components shall be tracked by Log Books.

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5.1.11 Unless specified by design, in-process handling, testing, or processing during initial assembly are not required to be entered into a Log Book.

## 5.2 Responsibility.

### 5.2.1 Design Organizations.

5.2.1.1 Shall specify on the drawing or procurement specification the requirement for an equipment Log Book. (Reference MPR 7123.1.)

5.2.1.2 Shall identify prior to critical design review (CDR) components which require a Log Book for which direct design responsibility is maintained, including contractor hardware, and develop a list to be provided to the project systems engineer and MSFC Safety and Mission Assurance (SMA) with the following pertinent information:

- a. Component name and part number;
- b. Whether the component is time-critical or cycle-critical;
- c. The maximum useful time/cycle prior to replacement; and
- d. Special instructions as designated by design engineering in section 2 of the Log Book.

5.2.1.3 Shall perform periodic reviews to determine if the list of components requiring Log Books requires additions or deletions.

5.2.1.4 Shall initiate proper documentation for hardware replacement, service or waive design limit, when an item has exceeded, or is about to exceed, its design limit.

5.2.1.5 Shall ensure that contractual requirements are adequate (Reference MPR 5000.1) to provide the proper Log Book information for procured hardware by:

- a. Providing the MSFC-approved Log Book form (MSFC Form 3473) or a requirement for an equivalent contractor form; and
- b. Assessing the adequacy of the contractor form.

### 5.2.2 Responsible Organization (RO).

5.2.2.1 Prior to release from initial assembly, the RO shall initiate a Log Book associated with the generation of the assembly work authorizing document (WAD) entering the basic part number, name, manufacturer data, WAD, contact, and design information on the front cover of the Log Book. (Reference MPR 8730.1)

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5.2.2.2 After final assembly, the RO shall enter in section 1 the data required to reflect the as-built configuration of the assembly/component for all MSFC Configuration Management (CM) controlled or MSFC contractor CM controlled subassemblies and complete the information required on the front cover for engineering configuration [revision, serial number, engineering parts list (EPL) number, applicable engineering orders (EOs), effectivity, reference designation number, and inspection report number (parts tag number)].

5.2.2.3 Detail parts which are standard off-the-shelf hardware (i.e., MIL Spec parts) are not required to be listed in Section 1.

5.2.2.4 The responsible Quality inspection organization shall certify by stamping/signing and dating the bottom right-hand corner of the last page of section 1 of the Log Book to signify that the identification data accurately reflects “as-built” configuration of the article.

5.2.2.5 Section 1 configuration status shall not be altered during subsequent hardware modifications due to design changes encountered during system level or environmental testing.

5.2.2.6 The RO shall record each operation as it occurs in section 3/Life History including further changes to configuration after initial assembly, which modifies the configuration previously certified in section 1.

5.2.2.7 The RO shall enter all discrepancy reports (DRs) (Reference MPR 8730.3), Special Inspections, Verification of Manufacturing, Rework, Test, and Retest Operations performed in section 3/Life History.

5.2.2.8 Performing personnel and SMA shall certify by stamping/signing and dating adjacent to the entry.

5.2.2.9 For each test event recorded, the type of test and the test procedure number and its revision level, as well as the acceptability of the test results, shall be entered in section 4/Test Data.

5.2.2.10 Variables test data as designated by design engineering shall be entered in section 2/Special Instructions.

5.2.2.11 The RO shall review Log Books received and initiate the necessary action to resolve discrepancies or deficiencies noted; audit Log Books prior to shipment of hardware to provide the project systems engineer with accumulative life/cycle data on limited-life items for his/her use in determining which items are to be removed as flight hardware; and ensure that items designated for removal are appropriately tagged.

5.2.2.12 On procured components requiring a Log Book, SMA and the RO shall verify receipt and adequacy thereof.

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5.2.2.13 As instructed by the Project Office, the RO shall stamp or print “Flight Reject” or “Scrapped Component” or “Removed from Controlled Inventory” in red ink on the front cover of all Log Books for which hardware has been permanently rejected for flight; removed from flight inventory; or decommissioned as controlled Ground Support Equipment and to which no further entries need to be made concerning the hardware history or test status.

5.2.2.14 The Project Office/Data Manager shall provide the RO disposition instructions for the Log Books pertaining to equipment dispositioned per 5.2.2.13.

### 5.3 Procedure.

5.3.1 MSFC Form 3473, “Log Book,” is the official MSFC equipment log and shall be used by all MSFC organizations when invoked by drawing requirement.

5.3.2 When contractually-approved equivalent Log Books not formatted per MSFC Form 3473 are furnished with procured hardware, the equivalent Log Book format shall be maintained by MSFC personnel upon receipt.

5.3.3 Upon completion of manufacturing operations, the Log Book shall be initiated to reflect the as-built status at the time of turnover of an item for inspection, test or checkout.

5.3.4 When required by design, the Log Book shall be required as part of the received data package at MSFC.

5.3.5 The requirement for furnishing the Log Book shall be specified by the contract or procurement drawing.

5.3.6 Log Books shall be kept in a current status following the instructions in the Log Book and accompany at all times the hardware item for which they were intended.

5.3.7 In the event of loss of the original Log Book, the organization having possession of the hardware at the time of loss shall initiate a new copy; complete the replacement Log Book to the maximum extent possible; and make an entry in the new copy denoting the approximate date of loss and initiation of the new one.

5.3.8 The transmitting organization shall ensure that the Log Book is up-to-date before sending hardware to another organization.

5.3.9 Log Books for hardware items returned from out-of-house for failure analysis, repair, or rework shall be maintained in accordance with this MWI.

5.3.10 Upon completion of the mission, the delivered Log Books for re-flight hardware for which MSFC is responsible shall be requested by project personnel to be returned from the



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launch site to the cognizant design organization for review, then re-united with the re-flight hardware as long as hardware remains in flight status.

## 6. CANCELLATION

MWI 8730.1F, Equipment Logs/Records, dated June 10, 2010.

*Original signed by*

Todd A. May  
Director

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## APPENDIX A Definitions

Responsible Organization (RO). Program-defined directorate, department, and/or office responsible to perform the specified operation, inspection, and test with the initiation and maintenance of the required documentation.

## APPENDIX B Acronyms

CDR	Critical Design Review
CM	Configuration Management
DR	Discrepancy Report
EO	Engineering Order
EPL	Engineering Parts List
RO	Responsible Organization
SMA	Safety Mission Assurance
WAD	Work Authorizing Document

## APPENDIX C Verification Matrix

None.

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## APPENDIX D

### Records

D.1 The “Log Book,” MSFC Form 3473, is a continually-updated document that follows the equipment where ever it goes throughout its lifecycle and typically does not remain at MSFC. The Log Book ships with flight hardware off center to the receiving entity (e.g., integration contractor, other NASA facility, or launch facility).

D.2 For hardware remaining at or returning to MSFC (flight hardware placed in storage, returning flight hardware, or Ground Support Equipment), the RO or test group that has custody of the equipment will keep the Log Book with the associated hardware throughout the lifecycle of the hardware, or till the project directs disposition of the equipment per step 5.2.2.13 and 5.2.2.14.

D.3 Log Books removed from service per 5.2.2.13 and 5.2.2.14, are temporary records and will be dispositioned in accordance with NRRS Schedule 8 (exact retention to be determined by the Project Office/Data Manager).

D.4 Unofficial Log Books, for reference only, as specified in section 5.1.9, will be maintained by the creating organization/engineer per NRRS 8/108 to be destroyed or deleted when no longer needed.